



UNITED STATES DEPARTMENT OF COMMERCE
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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/050,527 04/19/93 BOWDEN

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TSAY, F EXAMINER

CSM1/0311

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ART UNIT

PAPER NUMBER

3506

A

DATE MAILED: 03/11/94

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

This application has been examined Responsive to communication filed on 2/3/94 This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. Notice of References Cited by Examiner, PTO-892.
2. Notice re Patent Drawing, PTO-948.
3. Notice of Art Cited by Applicant, PTO-1449.
4. Notice of Informal Patent Application, Form PTO-152.
5. Information on How to Effect Drawing Changes, PTO-1474.
6. _____

Part II SUMMARY OF ACTION

1. Claims 1-14 are pending in the application.

Of the above, claims 12-14 are withdrawn from consideration.

2. Claims _____ have been cancelled.

3. Claims _____ are allowed.

4. Claims 1-11 are rejected.

5. Claims _____ are objected to.

6. Claims _____ are subject to restriction or election requirement.

7. This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. Formal drawings are required in response to this Office action.

9. The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are acceptable. not acceptable (see explanation or Notice re Patent Drawing, PTO-948).

10. The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been approved by the examiner. disapproved by the examiner (see explanation).

11. The proposed drawing correction, filed on _____, has been approved. disapproved (see explanation).

12. Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has been received not been received
 been filed in parent application, serial no. _____; filed on _____

13. Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. Other

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Part III DETAILED ACTION

1. Applicant's election of Group I, i.e., claims 1-11 in Paper No. 7, filed on February 3, 1994 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (M.P.E.P. § 818.03(a)).

2. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to adequately teach how to make and/or use the invention, i.e., failing to provide an enabling disclosure.

As best understood, applicant teaches an automatic drilling control system for controlling the release of drilling string in response to any combinations of the drilling parameters including the bit weight, drilling fluid pressure, drilling torque and drilling string rpm. Applicant further teaches that the rate of drill string release increases with decreasing fluid pressure, bit weight and drilling torque or decreasing rpm, and vice versa.

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In this regard, applicant apparently fails to consider that during the drilling operation, the factors affecting the penetration rate are in fact interrelated, any change of one parameter will eventually affect the others while holding the rate of penetration constant by controlling the release of drill string. In this instant invention for instance, by increasing the rate of drill string release due to decreasing bit weight when first detected will immediately cause the increase in drilling torque and as a consequence, according to the invention, one would have to immediately decrease the rate of releasing the drill string which obviously would have created serious conflict to the previous operational command to the control system. Similar contradiction would also occur between the rpm and the bit weight or between the drilling torque and the rpm and also between the pumping pressure and the remaining parameters as well. It is the examiner's view that at the least, applicant has failed to provide a logical explanation with respect to how such conflicts can be resolved. Because it is well known in the art that among other things, the relationship between the rate of penetration and the drilling parameters including the pumping pressure, the rpm, the bit weight, and the drilling torque are interrelated and interactive one can not simply isolate one parameter from the others (see Petroleum Engineering by Carl Gatlin, pp 114-131, included herein as a reference).

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3. Claims 1-11 are rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

4. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

5. Claims 1-11 are rejected under 35 U.S.C. § 103 as being unpatentable over Ball in view of Rogers and Gatlin publication. Ball discloses an automatic drilling control system which comprises an electronic drum brake control system in response to the bit weight variations (Fig. 3). Ball basically teaches the same principle of controlling the rate of drill string release as being recited in applicant's respective claims with the exception of the drilling fluid pressure sensor, the torque sensor and the rpm sensor. Inclusion of such sensors, in the examiner's opinion, is well within the scope of general engineering design

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considerations, in that it is well known to one of the ordinary skill in the art of drilling, the drilling fluid pressure, the drilling rpm and the drilling torque are among the important factor which affect the penetration rate and such has long been taught in the general publication such as Gatlin's Petroleum Engineering. To illustrate such inclusion, Rogers discloses a drilling optimization control system (Figs 1-3) which comprises a computer control system for optimizing the penetration rate. In which the drilling rpm and the thrust (or bit weight) are monitored and manipulated by the computer to achieve the optimal penetration conditions (Col. 4, lines 16+). It is therefore obvious to one of the ordinary skill in the art to have modified Ball's automatic drilling control system by including rpm sensor as been taught by Roger and further including the pumping pressure and the drilling torque sensors into the control system so that more drilling parameters can be monitored and the penetration rate can be more effectively controlled as such has been clearly taught in Gatlin publication.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Alder, Gray, Jr. et al, Tanaka et al, Jasinski and Frink et al all show automatic drilling control.

7. Any inquiry concerning this communication should be directed to Dr. Frank S. Tsay at telephone number (703) 308-2170.

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Tsay/FT

March 8, 1994


RAMON S. BRITTS
SUPERVISORY PATENT EXAMINER
ART UNIT 356